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ABSTRACT

This study examined the effect of prekindergarten attendance on first graders' academic achievement. A literature review reported the results of other studies on the effects of early educational experiences, such as Head Start, on at-risk students' elementary school achievement. In general, these studies indicated that early educational intervention increased cognitive gains in the primary grades, but these gains were not sustained in the upper grades; that motivational and attitudinal gains from early intervention were sustained through later formal schooling; and that students from poverty areas demonstrated greater gains than did middle class children. In the present study, the Comprehensive Test of Basic Skills was administered in April of the school year to 53 first-grade students of predominantly middle to low socioeconomic class. Of these students, 10 had attended a developmental prekindergarten; the rest had not. Results indicated that there was no difference in the reading, language, and mathematics achievement between the two groups. A list of 11 references is included. (BC)

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KINDERGARTEN EDUCATION AND THE READING, LANGUAGE AND MATHEMATICS ACHIEVEMENT OF FIRST GRADERS

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Legislation enacted in 1985 authorized the Illinois State Board of Education to administer a new grant program designed to provide early intervention services to children aged 3 to 5 years old. The statute determined the eligible population to be those "children who were at risk of academic failure because of their home and community environment" (ISBE 1989). The Board recognizes that positively influencing the character of early experiences can improve chances for school success. It is, therefore, their position to encourage the development of programs which provide "positive, nurturing experiences essential to helping young children at risk develop intellectually, socially, and emotionally" (ISBE, 1989).

Since the implementation of the law, the project has grown significantly with 11,173 reported students participating in June 1989. This represents an annual expenditure of 23.9 Million dollars. The Illinois State Board of Education is collecting on-going data to determine the effectiveness of this project. Students who have participated are assessed annually in the areas of reading achievement, math achievement, language ability and behavior. Results and progress of the students are reported to the General Assembly -- their data forming the basis for future funding.

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The first large scale preschool project began in the mid-sixties with the federally funded governmental Head Start project. This project was initiated for poverty children with goals to improve intellectual skills, nurture socio-emotional development and meet health and nutritional needs. Major emphasis was placed on parent and community involvement (Darlington, 1981). As the preschool movement evolved, private and public centers became available to children and families in all socio-economic communities. With more mothers working, the percentage of children attending preschool has almost doubled since 1968 (Chicago Tribune, 1982).

Many studies have been completed focusing on the academic vs. the developmental approach to instruction, the structured vs. the non-structured environment, parent involvement vs. non-parent involvement, poverty vs. middle class participation, and other factors which may influence the effectiveness of these programs. Measures of assessment include IQ scores, reading achievement scores, math achievement scores, language ability scores, motivation and behavior ratings. Instruments include standardized test scores and teacher reported school performance scores.

Clark (1984) reported approximately half a million students were enrolled in Head Start during the first summer of the project. After six to eight weeks of participation, students' I.Q. scores increased and achievement gains were noted.

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A study completed by Datta (1973) supported Clark's findings and reported the following: Project Head Start increased the amount and quality of health care available to the children; increased the amount of parent and community particiption, increased the number of children enrolled in preschool, increased services to families, and provided experiences which fostered child development. Students demonstrated increased IQ scores, increased preschool readiness scores, and increased motivation to achieve in school. IQ deviations, however represented the least magnitude and motivational changes represented the greatest magnitude. There was no agreement on the best type of curriculum although continuity of curriculum type was reported impor[illegible] for maintaining gains.

Shipman (1978) completed a logitudinal study analyzing the effects of Head Start programs. The study was based on children and their mothers from four regionally distinct communities. The families were followed over a period of six years.

Results indicated the following:

1. The formal educational background of the students' parents had the greatest relationship to the child's scores.

2. Changes in the mother's behavior contributed significantly to the child's achievement.

3. The child's early exposure to group activities and readiness tasks had a positive influence reported by reading and math test scores in kindergarten, first grade and second grade.

4. Test scores of Third Grade students did not demonstrate increased performance.

5. Mothers of Third Grade students who attended Head Start had better attitudes toward school and education than those of students who did not attend Head Start.

6. Changes in family interactions significantly contributed toward the child's cognitive development.

Wartsch (1982) reported the results of Werkart's study of the High Scope Educational Research Foundation in Ypsilanti, Michigan. The foundation conducted a twenty year study of socially and educationally disadvantaged childen who attended preschool during the 1960s. The study concluded that each dollar spent on preschool education is repaid almost two and a half times in future benefits to society.

Followup studies of the fifty-eight students who attended the Perry Preschool Program for two years and of the sixty-five students who did not attend preschool reported the following findings:

1. Eighth grade students who had attended the preschool scored more than a year higher than the control group on reading, language and arithmetic achievement tests.

2. Teachers in the early grades consistently gave higher behavior ratings to childen who attended preschool.

3. By fourth grade seventeen percent of the preschool participants bad been placed in special education as compared to 38 percent of the control group.

4. Only two percent of the children who had attended preschool were considered delinquents compared with fifteen percent of the control group.

5. Only one out of 50 preschool participants had appeared before a court judge compared with one out of six in the control group.

6. There were twice as many babies born to teenagers of the control group than babies born to the preschool participants.

7. The preschool participants performed significantly better in high school and demonstrated a greater willingness to do homework.

Ogletree (1990), in an article entitled, "School Readiness: The Developmental View", suggested the nature of the preschool curriculum rather than early entrance age, to be a significant factor affecting long term student growth. Ogletree reported a longitudinal study comparing the effects of parental education vs. preschool experience on children's later verbal ability found that although preschool experience was a significant predictor of verbal achievement scores, the mother's influence on the child was much more significant. "Even with socially-disadvantaged children, the initial gains of improved intellectual capacity, i.e., higher I.Q. scores, were not sustained beyond the second grade." They did however, demonstrate improved scholastically and fewer special education placements. Oglestree suggests that programs focusing on academic instruction, and forced learning in the early years may in fact be detrimental to the child's future intellectual development.

Several studies focusing on the effect of preschool education were reviewed by Chafel, (1990). The author referred to Schorr and Schorr, (1988) and a study completed by the Consortium for Longitudinal Studies. This study, representing the most extensive investigation ever taken of the long term effects of preschool educations, documented the following results:

1. Preschool education for children at risk elevated IQ and achievement test scores in both reading and math in Kindergarten, Grades 1, and Grade 2.

2. IQ achievement test gains later dissipated, usually by Grade 3 or Grade 4.

3. Significantly fewer children in the upper grades were retained.

4. Only thirty percent of upper grade children failed to meet school requirements as compared to forty five percent of the non-preschool children.

Chafel (1990) further referred to the "Sustaining Effects Study" which reported "a narrowing of the achievement gap in basic skills between lower achieving

children and their more affluent counterparts." Early childhood programs seemingly provided disadvantaged children with opportunities which broadened their experiential backgounds allowing the children the type of enrichment provided by the more affluent family. The more pronounced program effectiveness for low income children suggests that their need for early intervention is greater than that of children from more socially advantaged families.

Strand and Werner (1981) conducted a study called the Early Prevention of School Failure Project. They investigated schools across the nation where this program was adopted or replicated. The following conclusions were reported:

1. Larger districts with high percentages of low income and minority students were more likely to show larger gains in student achievement than were small districts with low percentages of low-income and minority students.

2. There was a greater gain in achievement for high risk than for moderate risk students.

3. There was agreater gain in student achievement where parent volunteers were used than for districts that did not use parent volunteers.

Studies were also conducted by the Illinois State Board of Education (1990) focusing on the Prekindergarten Program for Children at Risk of Academic Failure. Most of the students served were from low income families. More than half of those served were from minority groups. Fifteen percent had a native language other than English. More boys than girls participated. Most children served had no previous preschool experience. Based on data reported to the Illinois General Assembly in 1989:

> Sixty percent of the children served in prekindergarten (FY87) performed at average or above in kindergarten.
>
> Seventy percent scored above average or within the normal range on achievement tests in reading, mathematics, and language at the beginning of first grade.
>
> The behavior of three fourths of the children served in FY87 was rated above average or within the normal range by their teachers.

Summary

The studies that have been conducted over the past twenty years have given useful information for early childhood educational program planning. Early intervention yields increased cognitive gains in the primary grades. These gains however, are not sustained as the child approaches the intermediate and upper grades. Significant motivational and attitudinal changes in both children and parents have been noted from the time preschool participants enter Kindergarten. These changes have been sustained throughout the formal school years and have significantly affected the lifelong ambitions of both students and parents. These include lowering the dropout rate, improving motivation and attitudes toward homework and task commitment, lowering the delinquency rate, and increasing the number of students and parents who sought higher educational aspirations.

Students from poverty areas demonstrated greater gains when compared to the control group than students from middle class backgrounds. This may be due to the parental influences and changes that occurred in parental attitudes. The indirect family effect has been shown to be predictive of greater school success for children. Preschool programming has been shown to be effective increasing achievement in the early years and success both in school and adult life.

The implications of the research indicate that appropriate preschool education is a significant factor affecting future academic success. Future research in this area is critical and will have the potential for influencing legislative bodies nationwide in terms of fiscal allocations and public expenditures for preschool programming.

Procedure

Population

The population for this study includes fifty-two first grade students from two first grade classrooms at Posen Elementary School. Students attending Posen Elementary are from Posen, Robbins, and an unincorporated area of Blue Island. The population is comprised of caucasian, black and hispanic students, predominantly middle-low socio-economic class.

Sample

The school records indicate that ten of the fifty-two students attended a developmental kindergarten while forty-three students did not attend prekindergarten. All students from both subpopulations will participate in this study.

Method of Data Collection

The Comprehensive Test of Basic Skills is administered to all students of Posen Robbins School District 143½ during the month of April of each school year. Two samples of students have been identified including Group A - those students who attended preschool; and Group B - those students who did not attend preschool. The total reading, math and language scores from the CTBS which was administered during the Spring of the 1988-89 school year is the basis of measurement of this study. The non-equivalent post test only control group design is employed for this study.

The findings will be tabulated in terms of means and standard deviations. The t test will be applied at the .05 level of confidence to determine if there is any statistically significant difference between the mean scores.

Findings of the Study

The samples for the study included fifty-three first grade students from Posen Elementary School. School records indicated that ten of the fifty-three students attended prekindergarten. Two groups were identified including those students who attended prekindergarten and those students who did not attend prekindergarten.

Each year, during the month of April, all first grade students are administered the Comprehensive Test of Basic Skills. Results from the reading, language and mathematics subtests were used as a posttest. In order to determine if there was a statistically significant difference in achievement after prekindergarten experience, a t test for independent samples was done on the two sets of scores for each subject area - reading, language and mathematics. Table 1 summarizes the statistical analyses.

Table 1

Means, Standard Deviations, and t Tests for the Experimental Group and Control Group for Reading, Language, and Mathematics Achievement Scores

Reading

Test	Experimental	Control	t Test
Posttest Mean	415.3	386.5	1.21
Standard Deviation	64.97	67.59	

Language

Test	Experimental	Control	t Test
Posttest Mean	393.2	335.2	1.89
Standard Deviation	85.98	93.09	

Mathematics

Test	Experimental	Control	t Test
Posttest Mean	527.4	437.0	1.58
Standard Deviation	109.1	93.59	

An examination of the 1988 mean posttest scores for the control group reflect scores of 386.5, 335.2, and 437.0 for reading, language and mathematics, respectively. The 1988 mean posttest scores for the experimental goup are 415.3, 393.2, and 527.4 for reading, language, mathematics, respectively. The t test scores for reading, language, and mathematics are 1.21, 1.89, and 1.58, respectively; therefore demonstrating no significant differences in achievement of the two groups in reading, language, or mathematics.

This data lead to the acceptance of the null hypothesis: first grade students who attended prekindergarten will not demonstrate significantly differing scores in reading, language and mathematics achievement than those who did not attend prekindergarten.

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The results suggest that more in depth analyses are needed in order to establish conclusive evidence regarding this issue. For example, this study would have been more valid if the experimental group would have been larger. Further investigation may also include an analysis of the prekindergarten curriculum compared with an analysis of the achievement test content. For example, the effects of a developmental prekindergarten program focusing on socio-emotional development, fine and gross motor development, language development through creative dramatics and music, cognitive development through divergent thinking and problem solving may not be measurable on a standarized achievement test. Teacher observation or teacher rating scales might represent a more valid means of assessment.

The literature reported by Chafel (1990) indicated that children from lower socio-economic backgrounds demonstrated greater gains from a prekindergarten experience than those students from higher socio-economic backgrounds. Additional followup research in this area could also be beneficial to educators making decisions regarding prekindergarten programming.

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